MICHIGAN FARMER.

DEVOTED TO

AGRICULTURE, HORTICULTURE, AND RURAL AND DOMESTIC ECONOMY.

Volume III. Jackson, October, 1845. Number 7.

PUBLISHED MONTHLY,

BY H. HURLBUT,

EDITOR AND PROPRIETOR.

FIFTY CENTS A YEAR:

Five copies for Two Dollars—payable in advance.

[For particulars see last page.]

For the Michigan Farmer.

Calendar for October.

BY S. B. NOBLE.

Kitchen Garden.—During this month the gardener will find enough to employ himself with to secure the crops, and prepare the ground for the next year. Gather winter squashes, pumpkins, citrons, &c., and put them secure from frost in a dry cool place. Beets, carrots, onions, and other vegetables should now be pulled; cut off the tops about two inches from the crown. Beets keep best packed in dirt in barrels or boxes, filling all the space around the roots to exclude the air. Onions keep best in temperature of from 30 to 35 degrees, where they can have a free circulation of air. Dig oysters and parsnips that are designed for winter use, and pack them in dirt as directed for beets. Celery should be carefully dug; cut off decayed leaf stalks, and pack the roots in good earth, and fill up the vacancies around stems, leaving them as near the position when growing as may be, and place the boxes or barrels containing it in a cool part of the cellar. Pie-plant roots may be taken up, and regularly set out in boxes, watered *moderately*, and you may cut during the winter if placed in a warm place in the cellar or kitchen. The pie-plant roots left in the garden should have the earth dug around them, and some well rotted manure mixed with it. The asparagus plantation should be covered with a coat of well rotted manure, three inches deep. If not done last month, secure all the bean poles, and place where they may be kept dry, and you can have them ready for next year's use. Clean the garden by taking off all decayed vines, seed stalks, &c., and plough or spade *deep*, and leave the earth in ridges to secure the action of the frost.

Flower Garden.—If not already done, plant bulbous roots as directed last month, and transplant flowering roots and plants. Ornamental shrubbery may be set out early this month, or about eight or ten days after the frost has destroyed the leaves, and stopped their growth. Cut off decayed branches, and water well if the ground be dry. Dahlias should not remain in the ground over five or six days after the foliage is destroyed, as they will begin to grow; when dug, let the roots dry partially, and place them in a dry cellar.

Fruit Yard and Orchard should be attended to this month. Set out more fruit trees if wanted, raspberries, gooseberries, currants, and other small fruit. Procure the high-bush cranberry, and set out in the fruit yard; they succeed well, furnish fruit, and are quite ornamental. If not already done, dig around fruit trees, and cover the soil around the trees with chip manure. Observe to clear away a few inches from the trees, to prevent the mice from forming a harbor near the tree, as they frequently girdle trees, and destroy them.

For the Michigan Farmer.

Hints to the Cultivators of Fruit.

NUMBER VI.

Fruit trees are as much benefitted by good tillage as corn or any other crop of grain. Who would think of getting a crop of corn by planting it in his meadow, or upon ground that is hard and sterile? or should he perchance plant it upon a soil well prepared for its reception, and neglect to dress it, could he rationally expect a crop? And yet, strange as it may appear, farmers, who are famed for raising large crops of grain, seem entirely ignorant of the correct treatment of fruit trees, and make as sad blunders with regard to their cultivation, as the man who should attempt to raise his corn as supposed above.

To such, perhaps, the few remarks that follow will be of no avail; but in the hope that others may profit by them, permit me to suggest the following hints. See that your ground is thoroughly enriched, and thoroughly plowed, before setting your trees. After they are set, keep the ground well cultivated; don't stock

it to grass under at least two years—nor sow it to oats, wheat, or barley, nor plant it to corn, till the trees get thoroughly rooted, and the tops of sufficient size to absorb a sufficient amount of the gasses requisite to keep them vigorous and healthy. Beans, peas, turnips and potatoes may in the mean time be cultivated upon it, without materially injuring their growth.

Take a woolen cloth with soap, strong soapsuds, or weak lye, as is most convenient, and with it rub the bodies of the trees hard till the bark assumes a greenish hue, repeating the operation once or twice a year. The eggs of insects are thus destroyed, which, if left to hatch, would, to say the least, do your trees no good, and might do them great injury. The trees are kept free from moss, which can't be said of many orchards in Michigan: besides, the washing has a salutary effect upon the tree in other respects. If any one doubts it, let him try this experiment, and while he may not be able to show the reason, he will, I think, be constrained to admit the fact. Select a tree whose bark is dry and hard, and whose growth is stinted, and apply the wash, repeating the operation once in two or three weeks through the summer, keeping the ground cultivated, and, if I mistake not, he will find his tree vastly improved in appearance and health. Trees that have been neglected, may be resuscitated by removing the earth about the tree, from three to six feet around, according to its size, and to as great a depth as can be without disturbing the roots too much, and filling the hole with well rotted manure, mixed with leached ashes and muck; or, if more convenient, use chip manure and leached ashes, which answers a very good purpose.

Worms' nests should be destroyed as soon as they make their appearance. Early in the morning or evening is the best time for the operation, for at that time the worms will all be found snugly stowed away in their nests: while, if it is done in the day time, thorough work will not be made of them, as they are abroad, feeding upon the leaves.

Perhaps the following is as simple a method as can be adopted to destroy them:—tie upon a pole of sufficient length to reach the nests, a wad of tow or cloth; upon this pour a little turpentine; set it on fire, and thrust it into the nests while blazing. Some of them will fall to the ground; these may be destroyed by stamping upon them.

A Horticulturist.

Fattening Animals.

There are some rules which may be advantageously adopted in feeding animals, which, however obvious they may be, are too often passed over or neglected. Some of these will be specified; and

1st. *The Preparation of Food.*—This should be so prepared that its nutritive properties may be all made available to the use of the animal, and not only so, but appropriated with the least possible expenditure of muscular energy. The ox that is obliged to wander over an acre to get the food he should find on two or three square rods; the horse that is two or three hours eating the coarse food he would swallow in fifteen minutes if the grain was ground, or the hay cut as it should be—the sheep that spends hours in making its way into a turnip, when if it was sliced, it could be eaten in as many minutes—the pig that eats raw potatoes or whole corn, when either cooked, could be eaten in one-quarter of the time—may indeed fatten, but much less rapidly than if their food was given them in a proper manner. All food should be given to a fattening animal in such a state, that as little time and labor as possible, on the part of the animal, shall be required in eating.

2d. *The Food should be in abundance.*—From the time the fattening process commences, until the animal is slaughtered, he should never be without food. Health and appetite are best promoted by change of food rather than by limiting the quantity. The animal that is stuffed and starved alternately, may have streaked meat, but it will be made too slowly for the profit of the owner.

3d. *The food should be given regularly.*—This is one of the most essential points in feeding animals. If given irregularly, the animal indeed consumes his food, but he soon acquires a restless disposition, is disturbed at every appearance of his feeder, and is never in that quiet state necessary to the taking on of fat. It is surprising how readily any animal acquires habits of regularity in feeding, and how soon the influence of this is felt in the improvement of his constitution. When at the regular hour the pig has had his pudding, or the sheep its turnips, they compose themselves to rest, with the consciousness that their digestion is not to be unseasonably disturbed, or their quiet broken by unwonted invitation to eat.

All creatures fatten much faster in the dark than in the light—a fact only to be accounted for by their greater quiet. Some of those creatures that are the most irritable and impatient of restraint while feeding, such as turkeys and geese, are found to take on fat rapidly when confined in dark rooms and fed at stated hours by hand. There is no surer proof that a pig is doing well, than to see him eat his meal quickly and then retire to his bed, to sleep or cogitate until the hour of feeding returns.—*Albany Cultivator.*

It is bad economy for a farmer to deny himself good implements to work with.

From the American Agriculturist.

Trees for Shade and Ornament.

The spirit of utilitarianism is carried to such an extent in this country, that the ornamental is almost sacrificed to the useful. "What will be the gain thereof?" is the question propounded, when any project is proposed, instead of saying, in accomplishing this or that object, cannot the useful and the agreeable be united, thus gratifying the eye, and at the same time satisfy the *pocket*, which is the *primum mobile* of the age.

There is nothing that harmonizes the passions of man, quells the evil influences of trade, or adds to the happiness of the soul more, than to throw around him those various charms which are found in the natural world; the green fields, the flowers, the fruits, majestic trees, with flocks and herds reposing beneath their branches, the waterfall, in fact, the panorama of creation as it meets the eye of the agriculturist in his daily pursuits. It enlarges the soul, expands the intellect, and exalts man. If this be the effect of *viewing* nature in her loveliness, with how much more zest can these things be enjoyed, when our own hands have dug the soil, sown the seed, planted the tree, or trained the vine. We view them then as the fruit of our toil; and all know there is more real enjoyment in witnessing the results of our own labor, than in partaking of that which is bought with silver and gold.

These are some of the thoughts which have been suggested to my mind in reading in your May number the description of the beautiful grounds of Mr. Colt, at Patterson. I can say as did the Queen of Sheba to Solomon, when she saw the splendor of his dominions, "the half has not been told of them." Mr. Colt can truly say that, under his cultivation, the barren hills have been made "to bud and blossom like the rose." It has also induced me to make a few observations on the value and importance of shade trees as an ornament to towns and villages, and to propose a plan by which the object may be accomplished with pleasure to all.

It should require no argument to prove the value and utility of shade trees in public streets and roadsides. Yet when I look at many places in the country, more especially westward, I am pained with the thought that so little attention is given to beautifying them with noble shade trees. In too many cases, the streets are as barren of shade as the ocean. The people of New England have paid considerable attention to this subject, and, as a consequence, most of the villages are cared for in this particular. If any of your readers have passed through the village of Upper Middleton, Ct., they have probably noticed two splendid rows of maple trees running the length of the main street, which improve the appearance of the place more than would the most costly mansion. And as the inhabitants walk beneath the shade of these trees on a summer's day, and feel the cool breeze as it plays among their branches, have they not a just pride in pointing to them, and are they not a strong tie to bind the people to their native place? I mention this place as an instance, because it is my natal home; many more might be noticed, if it were necessary. Take away the elms from New Haven, and it would be shorn of its beauty.

The objection is sometimes urged, when public improvements of this kind are proposed, we may not live to reap the benefit, and what use is it to trouble ourselves about the matter. They forget that their posterity will receive it if they do not, and it is a narrow selfish soul that is not willing to do anything for the future; a spirit which, if carried out by others, would stop many of the public improvements in which mankind are now engaged. What would our country be at this time if our forefathers had acted on this principle? Trees might be planted that would serve the ends of ornament and be a gain also to the owner.—For instance, the maple might furnish sap sufficient to supply the family with sugar; the locust when grown is a valuable timber; the oak and the ash have their various uses, not to specify others that might subserve both ends, proposed to be gained by them. Thus, in a selfish view of the case, they can be made profitable, as they would generally be set out in land that is otherwise a waste or common. I would recommend that each man adopt the plan of planting shade trees in front of his dwelling; if this were done by a few persons, others would soon see the advantages of it, and follow their example.

Blind Bridles.

Look and reflect; use your own intellect. Yes, use your thinking powers, friends, they were given you to use and not abuse. Blind bridles! truly named, surely. Art never invented a more fatal thing to the eyes of horses than when she devised this plan of depriving the horse of what nature intended he should enjoy. But, says one, why are blinders injurious to the horse? Because they gather dirt and heat around the eyes. Dirt irritates the eye and heat produces inflammation. These bridles so entrammel the eyes of the horse, that he is compelled to be constantly straining them to see his way. This over exertion of the nerve soon brings on disease. Eyes were not made in vain. Had they been needless, they would not have been located in the head. They were placed on the corner of the head that he might have the advantage

of looking in different directions. Men, in the abundance of their imaginary wisdom, concluded the horse had too much sight, and they wished to curtail it: hence the origin of blind brides. Think of this seriously and you will abandon the use of so destructive an appendage. Remember, that blind bridles and diseased eyes are inseparably connected. Custom hoodwinks the senses of men, as much as blind bridles do the vision of horses.

JOHN MADDOCK,
Farrier and Blacksmith.

For the Michigan Farmer.

Housing Sheep.

NUMBER V.

MR. HURLBUT:—In Mr. Spafford's communication, which was evidently written for the purpose of annihilating the system of housing sheep, the following question is asked: "What comparison does the small requisition of the delicate shopkeeper bear to the robust constitution of the hardy yeoman, who provides fuel, and materials for building and fencing, in winter?" I answer. If the shelter and lodgings of the latter are to be in the open fields, with nothing but common stack yards and fences, give me the birth of the "shopkeeper," not merely on account of "the small requisition," as will be readily seen; and yet, I deem any other consideration as essential to sheep as man.

He says, "it has become proverbial that severe winters are far more favorable for sheep, as well as other domestic animals, than warm open ones." I am well aware, that horses, cattle and sheep, will consume more food in severe cold weather, than when it is otherwise. When any animal is exposed, or subjected to extreme hardship, (and our climate is the greatest natural one,) nature prompts it to partake of greater qualities of food in order to combat, or counteract it; therefore, inasmuch as those animals are exposed to greater hardships from severe weather, without protection than with it, the inference is that they consume more food with a view to their welfare. Nature is always exerting her utmost, to promote physical welfare for the preservation of the principle of life. As uniformity of appetite is essential to health, equability of temperature will tend to this important object; and so long as our winters are subject to sudden changes, how is this to be effected without confinement? Mr. S. acknowledges that he never kept any sheep in close confinement during winter. How well prepared he must be to judge of its utility can readily be seen. His arguments must be of course founded on supposition; and how supposition appears in a scale in opposition to experience, you can judge without any assistance from me; and although he would make you believe that his experience in sheep husbandry is considerably extensive, is it possible that he supposes you are to believe that he is a proper person to judge of the merits, or demerits of a system of keeping sheep without once having practiced it himself?

Having within the past year, twice visited several of the most extensive wool-growing districts in the eastern states, and after conversing with several who have practiced housing sheep for from 10 to 15 years, I am of the opinion that not one who has given the system a fair trial, can be induced to abandon it.

On the subject of providing water for sheep in winter, he says it is well to do so, yet "they will do without it;" but how well "they will do," he does not say. He probably thinks that humanity would dictate that they should have water; but where life is of so little consequence, as is hinted at in the fore part of his communication, "they will do without it." I consider water for sheep in winter of so much consequence that I will say to any man, that if he will feed his sheep on dry feed, from the first of December to the first of February, and deprive them of water and snow, if by disinterested judges they shall be pronounced in fair condition to live through the winter, I will pay him double what the going price is for sheep of the same quality of wool; but remember, I want fine wool; I do not purchase any coarse wooled sheep. If there is a breed of fine wooled sheep that will live without water, as above stated, I should be extremely glad to obtain some of them. The time above mentioned you will see does not comprise half the foddering season. It would seem from what Mr. S. writes near the close of his article, that I might obtain some of the above breed of sheep; as he says, he had one hundred and twenty last years lambs, that were wintered the past winter in a field without water or shelter, the most of which he should not be ashamed to compare with my fifty. I am credibly informed by one who saw them, that there was a chance for them to get water, at least at certain times, whether Mr. S. was aware of it or not. If so, I dare not purchase them, as I conclude I should be no better off than I am now.

G. J. BARKER.

Manchester, Sept. 18, 1845.

For the Michigan Farmer.

Anti-Housing Sheep.

MR. EDITOR:—I am far from thinking that "justice to myself" demands any thing from me on the subject of the management of sheep. Notwithstanding the protracted communications which have appeared to support imprisonment of those animals, I am willing to subject my first reasons for giving them their liberty, without any further remarks, to the thinking part of the community; but I am aware that many are inclined to be led away by new things, and to be blinded by sophistry. Indeed we have a particular demonstration of the fact; for neither of the two advocates found their zeal to maintain their system upon reason or knowledge. [Rather hard that, neighbor]. I have no disposition to protract this discussion (if so it may be termed) to the exclusion of matter more interesting and important from your columns. If, therefore, you deem this worthy a place, I shall consider it sufficient upon this subject, unless something extraordinary appears hereafter.

Mr. Barker positively affirms that he found a saving of hay, grain, and life, also an improvement in quantity and quality of wool to be consequent upon his experiment. This we have so far to take upon trust except the support of Mr. Swan, who knows all the circumstances of his experi-

ment. Now his experiment amounts simply to this: his fifty sheep were lambs; he probably had a certain quantity of wool, and that of a certain quality; but he had nothing with which to compare either, and the same holds good with the feed Mr. B. tell us why it is that your neighbors' lambs. were in as good condition in the spring as yours?

Mr. B. tells us that the first night that his lambs were out they were fully exposed to a heavy rain, and the next to quite a cold and frosty one, and even the first week was very unpleasant. If there is any thing in particular about the constitution of sheep that qualifies them for exposure to cold and wet weather one season more than another, I am willing to confess I have it yet to learn.—Were all the circumstances of Messrs. Morrell and Scovill's experiments known, they would probably be as conclusive as Mr. B's; else the extensive wool-growers in their respective vicinities would adopt their system.

From the constitutions of Mr. Morrell's sheep, according to his own account, one who has ever kept sheep knows their condition must be attributed to more than common exposure. Last season I raised 157 lambs, and lost seven, and them by cold rains, and not a "runt" among them: this year 150, dropt in May, and lost but two; and what is more, I did not have my ewes to lift, neither had they any protection more than the open field. My neighbors have been equally successful as far as I can learn.

One with half an eye will discover not only the real consideration to be secured especially from good-blooded sheep, but also the most prominent one set forth in my first communication; but for Mr. B's special benefit, I will give an example. I have this season imported at considerable expense of time and money, from the state of N. Y., 290 ewes and 22 bucks, of as much Merino blood as I could obtain, seven of which are the Paular blood, (which I consider the most profitable—they are hardy, large, and will yield a large quantity of wool, and that of a superior quality,) and some long wooled Spanish Merino(which are also highly recommended). Now I do not expect to realize a compensation for my extra trouble and expense in procuring these sheep, from the extra quality or quantity of wool alone, but the increase is the object. This I expect to range from 50 to 100 per cent.. and I wish to treat my ewes in a manner to secure to the offspring good constitutions. This, Mr. B, is a consideration of more importance to me than any other, or even more than all others combined.

T. L. SPAFFORD.

Manchester, Sept., 22, 1845.

Cure for Scours in Sheep.—First take your sheep-shears and tag them, as the filth that adheres to them in such cases, seems to augment the disease. Secondly, pick up a piece of straw or hay, and pick open the issues, as you will find one on the front of each foot, immediately above the division of the hoof, which is generally if not always closed when the animal is thus diseased. Be very careful not to break the skin. It may in some cases be necessary to open them twice a day for two or three days, but once will generally effect a cure. Should it be necessary to administer medicine internally, take good rennet prepared just as the cheese-makers use it to set their curd for cheese, and give from four to six table spoonsful, according to the size or age of the sheep. To a lamb eight or ten months old, I give four spoonsful, and if it is not well in 24 hours, I repeat it, and I always cure. I keep the article on hand in a bottle at all times.

Reed Burritt.

Burdett, Tompkins Co., N. Y., July, 1845.

A Good Flock of Sheep.

The Editor of the American Agriculturist, A. B. Allen Esq., in the May number of his periodical proposed a number of questions to wool-growers. These have been answered in the August number by Mr. L. C. Bingham of Williston, Vermont, from which answer we obtain the following statements respecting his sheep. His flock consists of two hundred pure full blooded Merino sheep, consisting of Gaudaloupe and Paular varieties in nearly equal numbers.

They are fed on grass in summer, and hay in winter, with little else besides. His hay is the best, and always fed out under sheds, well fitted with racks. He keeps his sheep under cover all winter except in pleasant weather. He raises ninety-seven per cent. of the lambs that are brought. He weans them by first of September. His flock averaged *five pounds and one ounce.* He gives the following table:

3	ewes sheared	7lbs. and upward each.
12	"	from 6 to 7
46	"	" 5 to 6
88	"	" 4 to 5
33	"	" 3½ to 4

The balance of the ewes went between 3 and 3½ lbs. More than half of them were yearlings, kept without one particle of grain.

The stock bucks sheared as follows:

1	yearling	Paular,	10	pounds 8	ounces.
1	"	"	10	" 10	"
1	"	Gaudaloupe,	7	" 4	"
1	two year old	"	8	" 8	"
1	"	" Paular,	8	" 8	"

All these sheep, he says, were washed very clean in a swiftly running stream.

Considering the number of sheep, and that they had but little or no grain, this yield of fleece is very large. It shows our farmers what may be done by care and attention, for we suppose no one will deny, if this can be done in Vermont, the like may be done in Maine. The present prices for wool, it is true, do not give very brilliant encouragement to our wool-growers, and the future looks rather *cloudy*, but nevertheless, those who do raise should study the business and make it as profitable as possible.—*Maine Farmer.*

From the Albany Cultivator.

Foot-rot (so called) in Sheep.

Luther Tucker, Esq.—A late number of the Boston Cultivator contains an article on this subject from Mr. Jewett of Weybridge, Vermont, which induces me to send you this communication. The importance to the sheep raising community of the whole continent to understand the nature and causes of the many diseases to which sheep are liable, is incalculable, and when well understood, they will be surprised to find the ease with which they can be cured, and in most instances prevented. When Mr. Jewett is informed that I was born and raised a shepherd, and that the little information I possess is the result of long and attentive practice, he will, I am sure, readily give me credit for the true intention with which I write, namely, to set him and others right as to the true cause of, and remedy for, this (so called) disease, and not to find fault with him, or enter into any controversy about it; for I willingly admit that he gives evidence of some practice and observation, and that I believe it is only necessary to *direct* that observation to make him a valuable shepherd.

Properly speaking, there is no such *disease of itself*, as foot-rot. It is invariably the result of the neglect of another disease, simple and easy to cure, or the result of accident by a bruise of the foot in some way; and always evinced by a slight but visible lameness in whichever foot is injured. It is *not contagious, neither can it be communicated by inoculation.* I saw the latter tested myself by the late Mr. Field, father of the present able veterinary surgeon, of London, on a visit to an extensive flock-master in Leicestershire; and I think by the time you read this through, you will be convinced yourself as thoroughly as though you saw the experiment tried, of the impossibility of its being so communicated, inasmuch as foot rot is not a disease of itself.

Sheep have a secretory [excretory?] outlet between the claws, peculiar to them, which is liable to become obstructed, and when obstructed for a few days the tender skin between the claws becomes red and inflamed, the sheep becomes lame on that foot, and more lame immediately after its first rising in the morning than at any other time of day, the inflammation making greater head-way while at rest during the night than at any other period. The watchful and observant shepherd will see the lame sheep at once on putting his flock up in the morning, and will apply the remedy which is simple. First clean the claw by running your finger or thumb up and down through it, wet with your spittle, if you have no water convenient, then take out your bottle of spirits of turpentine and wash it well with your finger with that, let the sheep lie a few minutes until the claw is thoroughly dry, (I shall afterwards describe the simple mode of securing a sheep so as that it cannot get off its side till loosened by the shepherd,) and then rub between the claw a mixture of two parts tar and one part sheep's suet boiled together, well blended and let cool, which the shepherd should always have prepared and in a tin box take out with him. This done let the sheep go to pasture again, and repeat the same dressing every second day until the sheep becomes well of the lameness, or until the skin breaks, which it sometimes will do in spite of the dressing, and assumes the nature and appearance of the disease called a scald, when you must then apply the liquid dressing described below. The scald is a disease of itself, though sometimes produced by the stoppage of the secretory outlet of the claws in the manner described above, is generally produced by very heavy dews, or a long continued series of humid weather, which predisposes the foot to this injury. It is as the other disease, first discovered by the shepherd from lameness, but at a different hour of the day. When a flock are first put up in the morning, the dew is heavy, is cooling to the foot and washes between the claws clean, and though the scald has made its appearance, yet at that hour, the moisture prevents the friction of the parts from hurting and causing lameness, and it is not discovered until towards noon, when the dew is all gone, and between the claws becomes dry, and the friction commences to hurt and irritate the parts, and then the lameness becomes apparent. When this is the case the shepherd knows this is the scald, —he collects his flock, catches the lame sheep, ropes them as it is termed, and lays them on their side. He then takes his wash, previously prepared, composed of two parts tar, and one of oil of turpentine well mixed together, and then slowly added and stirred in, one part of muriatic acid (spirit of salt) with after that four parts of blue vitriol, very finely powdered, to which add spirits of turpentine sufficient to make the whole, when well shaken up in a bottle, of a liquid consistency, so that the wash may be applied by dipping a feather into it, with which annoint the scald parts with the feather. The bottle must be well shaken every time the feather is dipped in, and when the claws are dressed the sheep must then lay tied until the wash is perfectly dried in, and a sort of incrustation is formed on the scalded parts, —every second day is enough to dress. It sometimes occurs that notwithstanding every care this scald turns to a *sore*, and then it is, that it is called the foot-rot. The sore is produced generally by something getting in between the claws, such as a bit of gravel or hard clay, or struck by some substance that would produce irritation, proud flesh and

sloughing. The treatment then is, if the sore extends either way to the horny substance, to pear it away to the healthy edge, then shake a little fine powdered loaf sugar on the part which will entirely take away the proud flesh, and then after half an hour apply the wash, and when dry, loose the sheep to pasture. Care should be taken never to wrap the foot with a cloth unless when the horny substance is taken away, and the part is left entirely bared to the ground, and then the one claw only should be bandaged; or if both are bared, *each claw should be separately bandaged*, to prevent greater friction of the parts, and to keep them the more cool. *Under this circumstance alone*, is a bandage on the foot of a sheep *ever admissible*, because it causes greater heat, and of course greater friction by keeping the claws bound together and not allowing them to spread. In this stage of the disease, it is necessary to dress every day, and it must be noticed, that the cool of the morning is the best hour for dressing, because the sheep in hot weather is much oppressed by being tied down on its side for the length of time, sometimes an hour or more, that the proper application of the dressing requires. It not unfrequently happens that sheep show lameness when you can neither see a scald, nor discover inflamation between the claws from the stoppage of the secretory outlet; and then the shepherd must look for the cause, by pressing and examining the hoof round, in the same way the cause of lameness is sought for in the horse's hoof, and when discovered, the horny substance must be pared down to the part affected, and then the application made as before described. In this case the lameness is produced from precisely the same causes, as the lameness in a horse's foot, by a bruise or hurt, or by the prick of a nail, or the gradually working-in of some sharp gravelly substance, which when discovered, and on opening matter is found, it is immediately pronounced as foot-rot in the sheep, but who ever heard of foot-rot under similar circumstances in the horse, or whoever supposed that the matter, if applied to another horse by inoculation, would produce lameness and a similar sore, in the same region, the foot? On this I deem any other remark unnecessary. No other help than the shepherd and his dog is required; and no other instrument than a strong, sharp, and well pointed two-bladed knife, the large blade to pear down the hoof, the smaller one to cut down to the part affected.

The way of tieing down sheep is as follows: get a soft rope made of tow with three plys, each ply as thick as your middle finger, five feet long; then splice both ends together and you have a double rope two feet six inches long, when you catch your sheep turn him gently on his side, then raise him to a sitting posture, having his head bent over under your stomach, take your rope and put it over the *left* hind leg just above the hock, catching the sinew, then give your rope two or three twists, so as to confine the leg, and pass it along the belly and on the side of the chest close under the elbow of *right* fore leg or shoulder, and pass the other end over his head on to his neck, lay him down on his side, and there he must remain secure until you choose to loose him. When you go to dress him or pare his hoofs, the easiest position for the sheep, and the handiest for the shepherd, is to place him in a sitting posture, the rope still left on until he is ready to be let out to pasture. The paring of the hoof can alone be well performed with a strong, sharp bladed knife, and is very simple; leave the bottom of the hoof, as even as possible, so that the sheep may have an even and flat surface to stand upon, taking care of not cutting down to the quick; the toes should be left smooth and rounded, and no portion of the heel touched, unless some jaggy part is hanging.

The shepherd with his dog and crook, and twenty-four tow ropes on his shoulder, his knife and vials in his pocket, can go out and pen his sheep in any clean and convenient corner, catch the lame ones and rope them, let the rest of his flock out to pasture, and then in a very few hours dress his invalid sheep, and be prepared for his other work. Suppose the shepherd to have the charge of a flock of 1000 sheep, he must be very ignorant, or very careless, ever to require to use more than twelve or eighteen out of his twenty-four ropes on any one day; there is no pusiness at which a man is engaged, that "a stitch in time is more certain to save nine," than in herding a flock of sheep.

With much respect, I remain, dear sir,
Your humble serv't, GRAZIER.
Louisville, Ky., July, 1845.

From the Prairie Farmer.

Wire Fences for the Prairies.

BY R. L. ALLEN, OF BUFFALO.

MESSRS. EDITORS:—In looking at the deficiency in fencing materials for your boundless prairies, which too generally exists throughout Illinois and Wisconsin, it seems to me that wire may be used in some instances with great advantage. Wire of a small diameter, only sufficiently large to prevent breaking by cattle and horses, will answer; and by using such as is galvanized, which will enhance the price only to a small extent, all rust will be effectually prevented. Four parallel wires will be an adequate protection against horses and cattle, and probably sheep; an additional one would at all events secure a field against their inroads. With hogs and geese, or *small-*

er cattle, no terms should be made, as they have no business at large around any premises. These wires may be kept in their places by passing through holes or staples in posts at intervals of 10 or 12 feet, and fastened at their extremities by keys or lapping. If any practical inconvenience is found from the expansibility of metals in warm weather, it may be obviated by a permanent fastening at shorter distances.

Posts for this purpose may be provided from wood, stone, or iron, (galvanized, and tapering from the surface of the ground both upward and downward;) or they may be secured to a line of trees which may be transplanted for this purpose on the required line of fence, which afford a present shade, and future timber or fruit.

Chicago, 7th August, 1845.

Editor's Table.

☞ *As many subscribers will be remitting to us their annual subscription during the present month, we would remind them of the provisions of the new Post-Office law, by which money designed for publishers may be deposited with Post-masters, who will send to the P. M. at the place of publication, a notification to that effect—postage free—while a like notification is to be sent to the publisher, (on which postage is expected to be paid,) who can then call at his Post-Office, and obtain the remittance.*

Where there are many subscribers at the same Post-Office, the advantage of clubbing in making the remittance is obvious.

Fall Transplanting.—Immediately after the first hard frosts have arrested vegetation is the period for the fall transplanting of fruit and forest trees. In the Eastern States, this is considered a more favorable time than the spring. In this State we have heard the contrary opinion expressed. We have ourselves found no difficulty in transplanting with entire success in the fall. There is commonly also, about this time, a season of leisure to the farmer, and we know of no way in which it can be more pleasantly or profitably employed, than in enlarging the orchards, and adorning the road-side and door-yard, with shade trees.

For many years to come, every farmer who has an orchard of choice fruit will find this, in every fruit-bearing year, the most profitable part of his farm. The State is by no means as yet adequately supplied with orchards, even in those portions which have been setted sufficiently long—and the filling up of now unoccupied lands, will prolong the market for fruit. Hence those who have, or who may now make large provision in this way, taking care to be choice in their selections, will be sure to reap a golden reward. After the market shall have become glutted, swine and cattle will continue the demand; and for ourselves, we confess we should have no objections to depositing a few barrels of cider in the cellar, obviating our temperance scruples, by using the simple means requisite to stop the fermentation.

But methinks we hear some desponding one say, "I am discouraged with trying to raise fruit—the seasons in this country are so unfavorable." Tut, man. Don't talk in this way. One bountiful fruit season out of five, will amply recompense you for all the trouble and expense your orchards will cost you. But you may safely expect better things than this.—The few past years have been more than usually unfavorable—not with us only, but also in many of our sister states. It is not probable that this course of unpropitious seasons will continue. To guard against them as far as may be, adopt the following precautions:

1st. Plant your fruit trees, so far as practicable, on the north and west sides of hills, and of buildings. On the north side, trees will shoot forth their buds and blossoms less early in the spring, and so be less liable to injury from late spring frosts,—on the west side, they will be shielded from the morning sun, while covered with frost, which, where it falls, aggravates the injury.

2d. If you have both sandy and clay soils, select for the site of your orchard that in which clay predominates, (provided it is not too wet,) because this will not push forward vegetation so early as a sandy soil.

3d. Retard the putting forth of fruit trees, on the approach of warm weather, by the means which have been heretofore suggested, viz: stamping snow around the roots, and covering with litter, &c.

An additional inducement for planting trees of whatever description around our dwellings, aside from ornament and the production of fruit, is found in the fact that they are promotive of health—and this is an idea of such importance that it deserves to be more generally appreciated than it is. The leaves of trees are their lungs, and perform a double office. By their under surface, they absorb from the atmosphere gases unsuited to the support of animal life; while from their upper surface, they give off oxygen, the vivifying and purifying principle. Each part of this double action, then, tends to fit the air the better for respiration, and thus contributes to the healthfulness and vigor of those who breathe it. Nor is this matter of theory or conjecture—but of experiment. A fact mentioned by Flint in his Geography of the Mississippi valley is strongly corroborative. He affirms it as a subject of general remark in the settlement of

the Western States, that while the dwelling of the settler remains under the shade of the forest, he and his family escapes from the diseases, incident to the climate.

We commend the article on "Trees for Shade and Ornament," to the attention of our readers.

MAMMOTH PEACH.—*Beat this who can.*—During our absence Mr. J. D. Butterfield, of Brooklyn, in this county, brought to our office a peach, 10¼ inches in circumference, and weighing half a pound—measure and weight taken by the gentleman in charge. Mr. B. thinks it is called the Columbia Peach. We subjoin Kenrick's description of the Columbia, from which our friend will probably be able to determine whether his belongs to this variety.

"COLUMBIA.—A large and very singular peach, with an extremely rough and thick skin, of a dull red color, marbled with blotches of a dark, dusky red; its form rather flattened, with a suture well defined; the flesh yellow, melting, juicy, rich, fibrous, and well flavored. September. This peach is a curiosity. Mr. Coxe, who probably originated this variety, calls it a fruit of uncommon excellence."

Remarks on Housing Sheep.

In this number we have again the varying views of two farmers upon an interesting point in husbandry. There seems little prospect that their views will be reconciled, and as both parties appear to have now stated fairly their opinions, and advanced their arguments to support them, it is probably better, (as probably both designed,) that the discussion should close; except, perhaps, as regards the correction of any error of fact, which possibly may have inadvertently crept in, in the warmth of argument. We thank both gentlemen for their communications, and request to be favored from time to time with the results of their experience. Both have superior flocks of sheep, but of different kinds, and both aim to realize the greatest amount of profit from them, though by different modes of management. We are sure our readers, as well as ourselves, will be interested hereafter to learn whose flock has turned out most successful.

We have taken some liberties with our correspondents' communications, using the editorial scissors to clip and abridge, but preserving, we believe, all that is most essential. We will now state briefly our own impression upon the subject in controversy, first acknowledging that we cannot speak from experience in the premises.

In most matters in which men differ widely in opinion, it commonly happens that truth lies between; and such, we believe to be the case in the present instance. If we had sheep to keep, we should neither adopt the continued close confinement advocated by Mr. Barker, nor the absence of protection countenanced by Mr. Spafford. We should want barns or sheds, (and the kind described by Mr. Barker is cheap, and for general use perhaps as good as any) in which sheep could be enclosed in all stormy or severe weather—and where they should be fed, and housed at nights in all weathers. During pleasant days in winter, we would give them the liberty of a yard, for exercise and recreation. Every day, they should have regular access to water, at least once. Snow, we should deem inadequate to supply the natural demands of thirst; and to keep sheep on dry feed, without even snow to moisten it, is surely both cruel and absurd.—The fact that they will do without water, is not proof that they will not do better and be more comfortable with it.

As to the degree of protection required, we think something depends upon the breed of sheep; the finest Saxons, such as constitute Mr. Barker's flock, needing more than the coarser varieties. With any kind, however, there is unquestionably an importatnt saving of fodder in keeping them in warm quarters; for this is a well-established fact, applicable to the keeping of all animals, as well as of man himself. The lower the temperature, the more food is requisite to keep up the animal heat to the required point. The fact that Mr. B. did winter his sheep very successfully, in the small space allotted to them without once letting them out during the season of foddering, (and this, we think, there is no reason to doubt,) is proof of the feasibility of the plan; and if the problem to be solved were how to keep the greatest number of sheep in good condition on the least possible amount of fodder, we have no question Mr. B's plan would carry the precedence.

If the question were asked, towards which extreme there were the greatest danger of tending, we should answer unhesitatingly towards too little protection. There is little hazard of exercising too much care. Where there is one instance of this kind, there are probably fifty of the opposite. To leave *any* domestic animal exposed to the storms, and abrupt vicissitudes of our climate, without shelter is, we must think, to say the least, not good husbandry, and although nature has furnished the sheep with a warm covering, the thin skin, and comparatively feeble constitution demand other protection. The tendency among the best eastern shepherds, we believe, is towards an increased amount of care in this respect, and although our snows are less deep, the climate in other respects is so nearly equal in severity, as to authorize, we think no essential difference of treatment. ED.

XUM

From Dr. Lee's Report on Agriculture, to the Legislature of N. York.

"It is not far from the truth to say, that 400,000 of the 700,000 children now attending our common schools, are destined to become practical operatives in the great art of making *something* into grain, grass, roots, milk, butter, cheese, wool, fat, lean meat, bone, or some of the numerous other products of rural labor. *Where* that something can be found, and *how* the raw materials of all cultivated plants should be combined so as to give the largest return for any given amount of capital and manual toil, are problems in practical husbandry, which science alone can solve.

If the ashes obtained by burning a ripe wheat, rye, oat, corn, barley or timothy plant, be analyzed, not far from 80 per cent. will be found to be silica, or common flint sand. This silica is an indispensable ingredient in the above named crops; and yet, not one particle of this mineral can enter the root of any plant except it be dissolved in water. Now, of all earthy substances, flint sand is the most insoluble. In leed, you may boil it for hours in aqua fortis, sulphuric or muriatic acid, without dissolving it. How, then, is the practical farmer to dissolve this mineral, which, more than all others, forms the *bone* necessary to give strength to the stems of his grain, that they may hold up, without falling, the load of ripe seed in the ears?

Chemically speaking, silica is an acid, and will unite with a large dose of the two alkalies, potash and soda, and form a soluble silicate of those bases.

This explanation reveals the reason why the alkalies in wood ashes are so valuable as fertilizers on sandy soils. On comparing the analyses of maple, beech and oak ashes with those obtained from cereal plants, there will be found a striking similarity in their respective constituents.

Next to clay, sand, and potash—lime, soda, phosphorus, sulphur, chlorine, and iron, are the most important minerals found in cultivated plants. To prepare these ingredients for use, the following is a cheap and easy process:

Take ten bushels of newly-slacked lime—i. e., ten before it is slacked—and mix it thoroughly with 20 bushels of loam or vegetable mold. Add to the heap five bushels of common salt and an equal amount of plaster of Paris. Moisten till the mass is like damp earth.

The plaster will furnish sulphur, and the common salt will yield both soda and chlorine. The latter will leave the sodium and unite with the caustic lime, forming a soluble salt, called the chloride of calcium. The sodium being first converted into soda, will then combine with the carbonic acid from the air and organized matter in the vegetable mould, and form a precious alkaline salt, which will dissolve common sand. Ground bones furnish the former, and copperas the latter mineral. If one can get the liquid excretions of domestic animals, or of the human species, and saturate the compost heap with this compound of ammonia, phosphoric acid, and of other valuable matters derived from plants, the fertilizing properties of this artificial manure will be greatly increased.

There is no branch of business in which the sciences of geology, chemistry, and of animal and vegetable physiology, are so useful to mar, as they are to the practical husbandman. The term science is but another name for knowledge. It is, however, usually limited in connection with natural phenomena, to the systematic investigation of the laws of nature. Of all men, the practical farmer is most interested in understanding and obeying these wise and salutary laws.

The fact is susceptible of demonstration, that from a general ignorance of these laws, we have wasted in the State of New York, within the last twenty-five years, the indispensable ingredients that go to form both *bread* and *milk* for our children, which, if placed in New York or Boston markets, would sell for one hundred millions of dollars.

The guano imported into Great Britain last year sold for $4,000,000. It is retailed in Western New York by an exchange of four pounds of flour for one of guano.

To make an acre of wheat that will yield twenty bushels, the plants must have twelve pounds of phosphorus. To purchase that amount of a substance, which forms one of the constituents of the human brain, at a druggist's shop will cost twenty-four dollars.

The fact is notorious, that there are thousands, if not millions of acres in this state, which once bore twenty bushels of good wheat per acre, that now yield not more than ten bushels. To make our twelve millions of bushels of wheat a year, we annually consume about seven millions of pounds of phosphorus. It is the phosphate of lime contained in grass and hay, derived from the earth, out of which all our domestic animals form the solid earthy portion of their bones. At present prices, the phosphorus and ammonia annually thrown away in the solid and liquid excretions of man and his domestic animals, are worth some $20,000,000.

A cargo of guano—phosphorus and concentrated nitrogen, derived from the fish on which sea fowls feed—arrived in New York, a few days since which will sell at some $60,000! What consummate folly to throw away the raw materials which form our daily bread!

Recent experiments in Scotland have demonstrated the practicability of growing forty-four bushels of wheat on an acre having only 1½ per cent. of organized matter in the soil. It must contain, however, to a limited extent, each of the fourteen simple elementary substances which form a wheat plant.

It is well known, that if a bin of corn be moistened, it will heat, and grow or rot. In the process of sprouting, a seed first imbibes some portion of the vital gas which surrounds it, which, uniting with the carbon in the starch, forms carbonic acid, and evolves heat. When starch thus loses one portion of its carbon, it is changed into a kind of sugar, making, as is well known, sweet bread from wheat a little grown. If a grain of wheat be surrounded by a little waxy clay, only a half-inch in diameter, it will not sprout because oxygen gas cannot penetrate the compact earth. By sowing grain in wet weather, so that the harrow covers the seed with mud, thousands of bushels are lost.

It is a matter of great practical importance to know how to develope a large, vigorous growth of roots. On a poor soil, this can only be done by the aid of science. Deep plowing, and a thor-

ough pulverizing of the soil, are indispensable to accomplish this object.

If it cost the farmers of New York twice as much land and labor to produce a bushel of grain as it does their competitors out of the state, how are the cultivators of the earth among us to prosper?

All the farmers in the Empire State should rise as one man, and insist that the science of keeping property and the science of good husbandry, shall be taught in all their common schools.

Within the last twenty-six years there has been taken from the public treasury about $200,000, to prepare the candidates for legal honors to study successfully the science of law. We have also four well-endowed medical colleges, now drawing from the public funds 5,500 a year, besides $200,000 before received.

If learning and science are the great highways to honorable distinction and public favor, why deny these advantages to those who do more than all others to feed and clothe the whole community?

It is true that science is the greatest leveler in the world: but, unlike the leveling of ignorance and brute force, it ever levels *upward*. It takes the highest point of mental attainment already achieved for its standard, and then, wisely and humanely attempts to elevate all below up to that standard.

The object of this effort is to make the triumph of *mind* over *matter* universal and complete. All men blessed with a common share of common sense, should have, in their every-day business operations, the full benefit of the best lights of modern science. Science gives to the poor man unknown and ever-increasing power over heat, light, electricity, chemical attraction, air, water, and the solid substances which form the surface of the globe.

All these elements are brought into recognition by nature, in changing crude mineral matter into living, organized—into the cultivated plants and domestic animals.

Why shall we refuse to do as much to make skillful scientific farmers, as we do to make skillful doctors and lawyers?

Who cannot see that commerce, manufactures and all other pursuits in civilized society, will be largely benefitted by increasing the productiveness of rural labor? Hence whatever we give to agriculture, is given to all classes."

Draining.

As the present month affords to the farmer who has the good fortune, (or good management) to drive his work instead of being driven, some time to devote to the general improvement of his lands, we wish again to suggest as a most important means of improvement to many, the draining of marshes. Wherever these exist, labor can scarcely be applied to a more profitable use, than in their reclamation. The following remarks of the Hon. Asa Foote, at an Ag. meeting in Boston, set the subject in a very clear light:

But the most important of the topics now before us, was *draining*. Were his opinion asked, by what means our agriculture could be most improved, at least expense, he would answer, unhesitatingly, by *draining*. It is well for the present age, that a deep and prevailing interest is beginning to be felt on this subject. And, thanks to the utilitarian direction which science is taking in the 19th century. Chemistry, induced at last, to turn from the *bowels* to the *surface* of the earth, in quest of "the true philosopher's stone," has contributed largely to this result. Her testimony has confirmed what observation had before less clearly comprehended, that all wet lands are literally "*heavy*" and "*cold*," and comparatively worthless; and she has *convinced* the mind of these facts, by showing that the constant presence of *water* excludes the influence of *air* from the soil —that by the constant evaporation of that water, a constant reduction of temperature is effected, wholly incompatible with the healthy growth of plants—and, further, that by this exclusion of air and deprivation of heat, the process of decomposition is so effectually prevented, that whatever nutritive substances the soil embosoms, are locked up from the reach of vegetation, and left to accumulate in the forms of muck and peat.

As the first encouragement to adopt the system of draining, he would remind his brother tillers of the soil, that, in general, those lands which call the loudest for this species of improvement, are, when reclaimed, of the richest and most productive character. He examined a piece of meadow, two years ago, in Berkshire county, which, from bearing nothing but aquatic plants, had been, by thorough draining, brought to produce in a single season, as testified to under oath by several gentlemen, *six tons* of herdsgrass and clover to *the acre*. This is a great story, I admit, said Mr. F., but I give it as I received it myself from the lips of the proprietor.

But there are other reasons for adopting this system. Lands thoroughly drained are tilled with much less expense, and in a more perfect manner. They can be tilled earlier in the season, and will more certainly mature their crops: less seed and fewer crops will be lost by the action of late and early frosts—the farm stock will have the benefit of a drier surface to range over, and sweeter herbage to feed upon—and the general appearance and healthfulness of the premises, (which are not to be disregarded,) will be improved.

His experience in draining, he said, though not extensive, had been something. He began to "sink money," as some of his neighbors termed it, about ten years ago. He had been "sinking" it as fast as he conveniently could, ever since—and he was far from being satisfied that he had "sunk" enough yet! for he had found that it uniformly rose to the *surface* again, and always bearing interest. He considered it even better than "casting bread on the waters," for he found it again after a *few* days.

His first experiment was on a mucky swale, of several acres, lying very flat, always saturated, and often flooded with water, and so soft as to render it dangerous for cattle to cross it. The depth of the muck was from 1 to 3 feet, and the covering consisted of a coarse reed-like grass, which stock would never touch, except in cases of necessity. He carried a main drain, 4 feet wide

at top, and deep enough to form a sufficient channel in the subsoil for the water, through the centre of this ground, and made a sufficient number of similar cross-drains to dry the whole surface. The average expense of these drains was from 25 to 30 cents per rod. The effect was, to render the soil sufficiently firm for cattle—to run out the coarse grasses and clothe the entire surface with sweet and nutritious herbage. The money which he "sunk" in the estimation of his neighbors, but *planted*, in his *own*, sprung up at an early day, and has borne fruit abundantly ever since.

From the Monthly Journal of Agriculture.

Fall Plowing:--Under what circumstances to be recommended.

ON THE ILL EFFECTS OF PLOWING LAND WHEN WET.

There are but few points of Husbandry, about which Farmers differ more in practice, than about Fall Plowing; and this difference, like most others, occurs from want of reflection on the *principles* that should govern the particular case—or rather, we might say, from want of knowledge of the principles, or *reasons* involved in every agricultural problem. You shall sometimes see a farmer turning his "glebe" at every odd time he can catch of open weather, in Fall and Winter; while another, his next neighbor, does not strike a furrow; and yet both may be right, for both may have been taught by experience that his system is the better one of the two. But were they to exchange estates, they would, too probably, each carry his practice along with him, because his action had been the result of habit rather than of investigation; and so they would proceed until, after some years of costly experiment, each would find that, in changing his land he should have changed habits also. The truth is, that whether land should be plowed up in autumn and exposed for melioration to the winter's frost, or whether left undisturbed under whatever coating it may be wearing, depends on various circumstances, and especially on the natural texture and composition of the soil. These circumstances are so well explained in the following Essay, that we have concluded to preserve it in the Journal of Agriculture. The reader will find in it, also, observations that cannot be too well remembered, in reprobation of one of the grossest blunders that a Farmer can commit—that of *plowing his land when wet*. We have long been so well satisfied, from personal observation as well as by the common-sense view of the case, of the very pernicious effect of stirring land when wet, not only on the succeeding crop, but on the land itself—effects from which it sometimes does not recover for years—that we take the first occasion, in a sense of duty, to impress it upon the reader, by the following forcible remarks on it in connexion with winter plowing. The rationale, in both cases, is here made apparent:

How to afford the necessary supply of Air to the Roots of Plants.

BY MR. J. MAINE, BROMPTON.

The breaking up, or turning the surface of cultivated land, either by the plow, spade, or hoe, for the reception of seeds or plants, is a process so universally practiced and indispensable for the well-being of the crops intended to be raised thereon, that it may be deemed incredible that such a common and simple affair should not be universally understood. And yet it cannot be denied that many and frequent mistakes are committed in this matter, and these must proceed either from indolence or ignorance.

As the surface of the earth is the natural station for the generality of plants, and where they obtain the necessary elemental food requisite for their development and maturation, certain conditions of the said surface are absolutely necessary. Humidity, heat, and air, in due proportions, are indispensable, both to the fibrous roots which are extended in the earth and to the head which is expanded in the air. There is more danger, however, from an excess of moisture than from the extremes of either heat or air; because, when the soil is saturated with water, the access of the genial air and its gaseous properties is excluded, and the delicate fibres, imprisoned and choked, it may be said for want of breath, must, in such a case, necessarily languish. That a porous soil is requisite for the free growth of every plant is an axiom in cultivation, and on this axiom all our operations of plowing, trenching, digging, &c., are founded; and, that no excess of water should at any time remain to chill, sodden, and consolidate the staple, draining in all its branches and modifications is had recourse to.

Soils are various in quality, and particularly in texture and consistency. The success of crops appears to depend as much on the texture of the land as upon any other property. For, where air and rain can permeate freely, a constant supply of both aqueous and gaseous nourishment is afforded, independently altogether of the richness of the soil, whether natural or artificial. While, on the other hand, if the soil be compact, baked hard by drouth, in consequence of its having been previously labored or stirred when too wet, no plant can possibly flourish. The conclusion, therefore, is, that the soil for any kind of crop should never be impervious to air from being saturated with water, nor impervious to both air and water from its dry adhesiveness.

Sandy soils upon a gravelly or chalky subsoil, are never liable to be drenched with water but only for a very short time after heavy rain, or sudden thaw when snow is on the ground. All the water absorbed by such a soil sinks deep into the subsoil, and far below the roots of corn or any agricultural plant on the surface. Such a soil needs neither draining nor subsoil plowing. Neither does it ever require to be exposed to the frosts of winter, or any kind of treatment by implements to produce amelioration. It is almost always in such an open friable state that it may be plowed and sown at any season, without risk of being plowed and harrowed into the condition of mud, or of being poached into the state of mortar by the horses' feet.

In some countries there are large tracts of such land, and on these farmers are generally fortunate men. The culture is easy, and executed at a moderate expense. The crops of turnips are heavy; and if, besides the ordinary supplies of dung and tail-dress, the farmers can manage to give their fields a liberal coat of marl or reducible clay every eighth or tenth year, the heart and for-

tility of the staple is maintained unimpaired for ages.

In such descriptions of land, however, it often happens that beds of clay lie alternately with those of sand at different depths beneath the surface. These beds of clay, if the general surface of the farm or field lies sloping, crop out at different distances below each other and above each the surface staple will be either occasionally or constantly wet. If a pasture, rushes will appear accompanied by the worst grasses, and herbage produced that will certainly rot sheep, especially if introduced from drier pasturage. If the land be arable, the crops raised thereon will be unequal; on the wet places, the grain will be either too rank and inferior, or fail altogether. In such cases, efficient under-ground drainage is the remedy to get rid of the superfluous moisture, either by gently-falling diagonal or direct channels. The proper direction of the drains depends on the depth, extent, and inclination of the beds of clay, and it is well to have a professional man to stake them out, unless the tenant has a sufficient knowledge of geology himself. It is surprising to those who know but little of the nature of the various strata of the earth's surface, how easy it is in some cases to get rid of surface water. For instance, if there be wet and dry places on the same field, the owner may be assured that a bed of clay, or other kind of earth impervious to water, lies beneath the wet, and a porous subsoil beneath the dry places. A drain of sufficient depth opened (and filled nearly to the surface with stones or loose gravel) from the wet to the dry places, will certainly render the whole dry. In my own practice, and acting on this principle, I have been in many cases very successful in laying arable fields dry. Two cases I may mention as examples:—A field of eleven acres, of a fine loam, suitable for wheat, beans, or indeed any other crop, had a hollow near one of the ends, which was every winter filled with water, and ruinous to wheat or grass, very frequently to the extent of between two and three acres. This I resolved to drain. A neighboring farmer predicted that the attempt would be a failure; because his father, when tenant, sunk a shaft to the depth of above seventy feet, in the lowest dip of the hollow, and filled it with stones, expecting that this would form a *swallow* for all the rain and melted snow retained by the hollow. But this expectation was not realized; the water first filled the pit, and then flowed over the land as before. The cause was easily comprehended: the pit did not reach to the chalk-rock, nor did it pierce through any porous stratum; its loamy sides and bottom were perfectly water-tight, so that little or none could escape.

My plan was different. I saw marks in an adjacent field of where chalk had been drawn at some former time; thither I opened a stone-filled drain below the plowshare, from the lowest dip of the hollow: and, when the water had accumulated, it ran towards the old chalk-pit; but totally disappeared long before arriving at the place, and thus was a valuable field laid dry. Another arable field contained a pond, which very often overflowed its boundaries. Lower ground was at the distance of half-a-mile; and the expense of forming so long a drain prevented all attempts to get rid of the annoyance. I advised the tenant to dig a deep drain from the pond up into a high bank of gravel, into which the water oozed away immediately; and ever after carried off all excess. By this simple expedient a large piece of excellent land was reclaimed and brought into a regular course of culture at a very trifling expense.

It is by such means that land, naturally friable and loose in texture, may be relieved of superabundant water, and give admittance to the necessary supplies of air at all times. I have already observed that sandy soils require no exposure for the purpose of reducing adhesiveness either by the action of frost or machinery; and yet we often see such land carefully fallowed up in the autumn, and even laid in ridges, to receive the advantages supposed to be imparted to it by the contact of frosty air. That such an idea, namely, that arable land is benefitted by exposure to frosty air, has been long entertained, is evident from what has been written on the subject by old authors. Even our amiable poet, Thompson, in one of the flights of his pregnant imagination, says—

> "The frost-concocted glebe
> Draws in abundant vegetable soul,
> And gathers vigor for the coming year."—Winter.

Showing that the notion was held by philosophers as well as cultivators; and, at the present time, there are many among the latter who mistake the disrupting, ameliorating effects of frost on tenacious soils for its enriching property, which they imagine is communicated to all soils. But this is a mistake; the less light sandy soils are exposed to the sun and air, the less are they exhausted of their humid riches. Their best qualities are as liable to be washed away by winter rains as dissipated by the summer sun; and, therefore, they cannot be too close and level during winter if it is intended that they should be cropped in the spring.

I have often noticed the mismanagement of a field of light soil by the following culture:—It was fallowed, cleaned, dunged, plowed, and sown with tankard turnips about the middle of June. The crop was abundant, and a flock of full-mouthed wethers was put on in the end of September. Within a month, the turnips were eaten off, and the field was plowed into single 'bout ridges to lie for the winter. In April, the ridges were plowed and harrowed down, and barley and seeds were sown. Both rose well; but, throughout the summer growth, the ridges were as visible in the crop as they were after the plow, the centres of the ridges bearing the finest and strongest plants of the crop. And the reason was obvious: the centres of the ridges came up fresh, moist, and mellow, while the intervals were filled with the bleached dry crests of the ridges, which, though more pulverized, were much less fertile and stimulating than the fresher portions of the surface. Hence it was quite evident that, if the whole field had been permitted to lie undisturbed till the spring, the crop would have risen more equally and much more vigorously. I have seen fields of similar soil sown with oats after wheat—a bad custom certainly, and as badly executed—the wheat-stubble being plowed in October, and the oats sown and harrowed in February, whereas, had the wheat-stubble been only scuffled off and harrowed to bring up a crop of seed weeds, and so rested till February or March, and then plowed

and sown, the crop of oats would have been much more abundant both in straw and grain than by the former method.

Here it is necessary to observe that, as I set out with showing how absolutely necessary an open porous soil is to all vegetation, and no measures being recommended in the above statements for that purpose, but rather the contrary, it is to be remembered that I have been treating of sandy land, which is at all times, except when too wet, sufficiently porous for the reception of air. But in other descriptions of soil, such as that whose particles are minute and have a tendency to adhere closely together, either by gravitating subsidence or by a flow of rain water—in such a case, every practicable means must be taken to alter and break this solidifying nature of the staple, in order to admit a free range of air and the gases it contains.

There are many intermediate descriptions of soil between sand and clay, and all of these, according as they approach to the one extreme or the other, require a peculiar management. But the grand object is to work the soil in such a manner that it shall always be pervious to air, rain, and all atmospheric influences. And this result is obtained by the *timely* application of the implements rather than by the efficiency of the implements themselves. The soil is sometimes in a fit state to be worked, and very often is not.—Under such circumstances the judgment of the cultivator must be exercised. The condition of the land depends very much on the season and character of the weather; and on this account seed-time cannot always be commenced at the times which would be most convenient to the farmer. In such a case, he must wait until the land is in right order to be stirred; and that state is, when it is neither too wet nor too dry. I am alluding to land which has either been thoroughly drained or which needs no draining, and is only affected by the season, whether very wet or very dry. But as the exact time cannot always be hit upon, it is better that the arable surface be rather too dry than too wet when moved. Because, if too dry, it may be reduced to the necessary fineness by labor, and will then be in the best possible state for the reception of seeds; the interstices between the particles of the soil being filled with air, amid which the imbedded seeds germinate in the greatest vigor. But if the soil be too wet when moved, and especially by the pressing or pushing action of the plow, it acquires, from the excess of water, a state of fluidity like mortar, and settles down again so compactly, that no seed laid therein can be developed in a healthy condition, in consequence of the want of air.

That the contact of air to the roots of plants was always considered necessary, is evident from old writings; but the fact has never been so generally noticed and acted upon as it is now. The first and most striking instance confirmatory of the opinion was the fact of large full-grown ornamental forest trees having been killed by their roots being too deeply covered up with earth when leveling lawns; and planters and gardeners have been long aware of the injurious effects of planting as well as sowing too deep. The same individuals formerly fancied that their prepared composts, for exotic or favorite flowering plants, could not be too finely sifted for their reception, whether in pots, or in the open ground. But slovenly or careless management in these particulars showed that too much nicety of execution was not at all necessary. Sifting the composts was given up, and composts made up chiefly of nodules of turf, broken stone, brick rubbish, &c., are substituted with evident success; and the cause is obvious—when the compost is sifted, it becomes a solid mass, especially after it is watered, and repulsive of all atmospheric influences, whereas among the loose materials, a considerable body of air reposes, and in this the more active fibres extend themselves much more luxuriantly than they do in compact soil.

The gardener's improved practice is only another proof how much a porous soil and presence of air are necessary to the roots of plants; and yet we often see the most luxuriant vegetation produced by soils which are apparently very close in texture; viz: alluvial soils and fertile clays. Both these descriptions of soil being composed of the finest atoms, become exceedingly close and compact if undisturbed; but when plowed, or otherwise moved periodically, the stirred portion attracts as much of the qualities of the air as suffices for the following crop. It is rather remarkable that, while oak thrives best on a clayey subsoil, it does not seem to affect rich alluvial land; and this I imagine to be entirely owing to its closeness of texture preventing all access of air to the place of the roots.

Aquatic plants which live entirely submerged, although defended from external air, receive as much as they need from the surrounding water, which always contains a notable measure, besides nutritive bodies in solution, which form the pabulum of plants, whether aquatic or terrestrial.

Another tribe of plants are attached to earth, but so slightly, that their system of roots is nothing compared with the bulky heads sustained; and as these plants are mostly found on rocks, or on the driest tracts of country, it is evident that the greatest portion of their nutriment is drawn from the atmosphere. Another tribe of curious and beautiful flowering plants is called Epiphytes; [or parasitical plants, as the Misletoe;] because they attach themselves to the stems and branches of trees, not to sustain themselves by extracting their juices, but to be supported in the deep shade and moist air of thick tropical woods. Some of these are called *air plants*, and grow as well in a basket without earth, suspended in a warm, damp, shady place, as if they were in their native habitat.

Thus we see that air is particularly necessary to plants, and as much so to the roots as to the head and foliage; and it is this fact, as already observed, that justifies all the means of cultivation which we have recourse to with a view of rendering the staple more loose, and consequently more permeable to all atmospheric influences.

There is one circumstance, however, which deserves to be noticed along with these general remarks: it is this—that all seeds require to be closely embedded in the soil, that is, they should be in close contact with the mould all round; and, that this should be completely secured, some seeds require to be laid in *heavy*, as wheat for instance.

Now we have only to consider that as the soil has been previously prepared, and more or less reduced to the finest practicable state, a considerable volume of air is incorporated therewith, and that this air, according to its temperature and the moisture of the soil, facilitates the germination of the seed, and continues to assist the development of the plant. To obtain this close embedding of the seed, it is the practice to roll it in—a practice which is found of service to wheat, peas, beans, and almost all small seeds; but which would be of no avail without the previous disruption and aeration of the soil.

All these matters premised, it only remains to conclude with a general declaration that, in all our practices and means employed for the amelioration of the land, every thing that can be added or taken away, every operation performed, and every implement used in the culture, should all have for their ultimate object either directly or indirectly, the breaking up of the compact and impervious surface, so that copious and constant supplies of air may be freely admitted to the roots of the plants.

Account of an Experiment in Deep Plowing.

BY REV. JOHN JAFFRAY, DUNBAR, EAST LOTHIAN.

The experiment was made upon a small field, which is sixty-five feet above the level of the sea. The soil is sandy, resting upon a subsoil of sand and gravel of great depth, and so thoroughly drained by the declivity of the surrounding lands, that want of moisture is its natural defect. There is but little difference between the soil and the stratum on which it rests beyond what culture and manure have made; but, from sinking of gravel, treading of horses, and pressure of the plow, year after year, and age after age, the subsoil had become crusted, hard, and beaten as a road. In short, from shallow plowing, there was but little depth of cultivated earth; and, as on all such soils in dry seasons, the crop was scorched and scanty.

With a view to render this field fruitful in any season, it was subsoiled with the Deanston plow, eighteen inches deep, and sown with wheat for crop 1837. The great vigor and luxuriance of the crop attracted general notice; and it must have yielded an extraordinary increase, if it had not been lodged by wind and rain shortly after the ear appeared. Therefore it gave only thirty-eight bushels of grain to the acre, but three tons of straw, which proved its great strength. To this crop, one of potatoes and two of wheat succeeded; but it is the culture of this field for crop 1841, and the result, which chiefly constitute this report.

It was all equally dressed with seaware; and four acres of the same quality and description were measured and staked off. Two of these acres were plowed twelve inches deep, with two horses, and two of them eighteen inches deep, with four horses. These two portions in all other respects were cultivated and managed exactly alike. They were planted with potatoes of the Don species in the last week of April, eight inches deep, twelve inches asunder, and in drills thirty inches wide, running at right angles to the furrows of the experimental plowing. The potatoes were planted deeper than usual, therefore the shoots were longer in coming through the ground; but, when they did appear, it was with great strength and regularity. They expanded their broad deep-green leaves, and grew vigorously, in the dry sandy soil, in a very severe and long-continued drouth. It was soon evident that the deepest plowed portion had the advantage; the stems and branches of its plants were stronger, and they first covered the ground.

The potatoes were lifted in the last week of October, when it was found that the land plowed twelve inches deep produced fifty-seven bolls per acre, and the land plowed eighteen inches deep produced sixty-nine bolls per acre, being a difference of twelve bolls per imperial acre, of four cwt. to the boll.

It is a condition annexed to the premium offered by the Highland and Agricultural Society for experiments in deep plowing, that one-half of the land used "shall be cultivated in the ordinary way." By evidence before the Agricultural Committee in 1836, the depth of plowing in this country is from *six* to *nine* inches. If that depth had been taken for the lowest extreme in this experiment, the difference in the production of the two portions, it is believed, would have been greater; but as this field had been plowed *twelve* inches deep for years, its ordinary depth was adhered to, and the difference is certainly sufficient to establish the advantage of deep plowing.

As to the quality, it is excellent for the season from both portions of the land, and in that respect there is no difference. The potatoes from the deep tillage were larger, more of one size, had fewer small ones, and not so many of a green color as those from the other division.

The quantity on the deep tillage is eighty-seven bolls per Scots acre, which is a good crop for any year; and it will readily be granted that it is far above the average of the district this year, many fields not producing half a crop. A superiority so striking must, therefore, be ascribed to deep culture, being on both portions deeper than ordinary, which furnished moisture in a very dry and scorching season to a sandy soil, and raised its produce above that of richer lands. But though this is a great crop for the season, it must have been still greater if the field had been less exposed, as it has no shelter; and three days of very violent wind in the first week of August broke down the plants, which, from their great luxuriance, were then very tender, and checked their growth.

The practical conclusions to be drawn from this experiment are—

First, That deep plowing increases the produce.

Next, That, as both portions of the land used in the experiment were opened up eighteen inches deep by the subsoil plow for crop 1837, the full benefit of that operation is not obtained till the earth so loosened is again plowed up. And the reason is evident; for it is then only that the soil is deepened, by an addition from the subsoil with which it is intermixed, and rendered more fruitful.

Lastly, If deep plowing increases the produce, it increases also the supply of vegetable manure; and a greater portion of manure added to improved culture, must produce a progressive increase of fertility and of produce.

From the Albany Cultivator.

A word or two about Bee-hives.

LUTHER TUCKER, Esq.—In making hives for bees, there appear to be two important objects to be gained—viz: Security against the moth, and to obtain the honey without injuring the bees. Almost every new invention attempts to perfect one or the other of these objects. Upon observing these little insects in their wild state, we find them content with almost any clean cavity which contains sufficient space and affords them security against the weather. Learning this fact, it behooves us to give them as simple a contrivance as possible to combine comfort, security, profit, and neatness. They want no "patent fortified palaces," but a home. Give them a convenient and neat one, and they will fortify it themselves against all intruders. I have for several years kept bees, and have taken an interest in obtaining suitable hives for them, have examined a great many patent constructions and believe the following simple one, which is free to all, combines all the advantages of any of the complex patents.

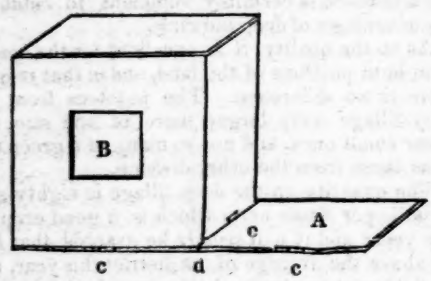

Fig. 1.

Fig. 1 represents the stock hive placed upon a moveable bottom A, which can be taken out and cleaned at pleasure—B B B, are glass windows, with shutters—c c, show the entrances which are in the bottom board—d, slide made of small hoop iron, working in a saw-cut in the side of the stock hive and controlling the door e, which connects the two hives.—When the stock hive is filled, place a brick against the entrance c, set another hive on A,

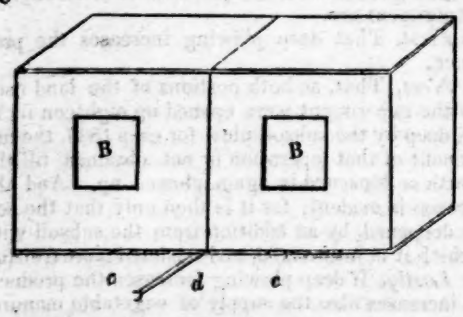

Fig. 2.

as in fig. 2; draw out the slide d, and the bees finding no outlet excepting through the new hive by the door e, will pass out that way and soon commence building in the additional hive.

These hives are ten inches in the clear in length, breadth, and height, and if made in a workmanlike manner, and painted, are an ornament to any grounds, and will secure all the honey the swarm can spare, to the owner, without injury to one bee.

In regard to the moth, I would remark, there has not one hive come under my observation which offers much security against them. To stop their ravages we must prevent them from laying their eggs about the hive; to effect which the following simp e plan (which I see some of your correspondents have noticed,) and which I have tried for the last three years, is perfectly effective:

Take a vessel with precipitous sides, a tin cup or porringer for instance; fill it about half full of mild vinegar or cider, place them at nightfall on the benches or hives, about one to each, and remove them early in the morning. Every miller that passes that way will be found in the liquid. By persevering in this course during the months in which the moth lays her eggs, all loss from her ravages may be prevented. BARCLAY WHITE.

Pemberton, N. J. 6 mo. 13, 1845.

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Michigan Farmer.

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